Notes on miscellaneous brāhmaṇa passages from the Yajurveda

The upasthāna ritual is performed to let the sacrificial fire remain in residence after the primary oblations are complete. In the triple-fire śrauta rite this is done at the āhavanīya altar with several incantations specified in the saṃhitā-s of the Yajurveda, e.g. Taittirīya-Saṃhitā 1.5.5. Among those incantations the following is recited:

इन्धानास् त्वा शतं हिमा द्युमन्तः समिधीमहि ।
वयस्वन्तो वस्यस्कृतं यशस्वन्तो यशस्कृतं ॥
सुवीरासो अदाभ्यम् अग्ने सपत्न-दम्भनं वर्षिष्ठे अधि नाके ॥
Kindling you, may we kindle [you] in luster through a hundred snows [winters].
The strong one the maker of strength, the famous one the maker of fame.
With good heroes, the undeceived, O Agni, the deceiver of foes in the highest heaven.

The Taittirīya-Saṃhitā furnishes the following brāhmaṇa passage for the above mantra-s (In TS 1.5.7):

इन्धानास् त्वा शतं हिमा इत्य् आह । शतायुः पुरुषः शतेन्द्रिय आयुष्येवेन्द्रिये प्रति तिष्ठति । एषा वै सूर्मी कर्णकावती । एतया ह स्म वै देवा असुराणां शततर्हां स्तृंहन्ति । यद् एतया समिधम् आ दधाति वज्रम् एवैतच् छतघीं यजमानो भ्रातृव्याय प्र हरति स्तृत्या अछंबट्कारम् ।
He recites: "may we kindle [you] through a hundred snows [winters]". He lives a hundred years and has a hundred senses. Verily he is stable in life and senses. This is a red-hot tube with cutting edges. By this indeed the deva-s have struck hundreds of piercings on the asura-s. When he takes up the fire-stick with this [incantation], the ritualist hurls the śataghnī like the vajra for his enemy's overthrow without fail.

The text is notable in being, what to our knowledge, the earliest mention and description of the weapon frequently encountered in the itihāsa-s and purāṇa-s and also found in the Arthaśāstra of Viṣṇugupta Cāṇakya. The weapon is described as being a sūrmī, which tradition holds to be a red-hot hollow cylinder. It is described as being karṇakāvati, i.e. with prongs or cutting edges. As its name goes, śataghnī, and from the description of the at-

tack by the deva-s on the asura-s in this brāhmaṇa, it is clear that it was intended to be a weapon of "mass destruction". Thus, it is reminiscent of what the braḥmaṇa-s are described as having deployed on the Egyptian Herakles by Flavius Philostratus in his biography of Apollonius of Tyna. It is in this context that he says that if Alexander had penetrated beyond the Vipāśā river he might have not been able to take the fort of Indians even if he had 10000 Achilles-es and 30000 Ajax-es with him. Given that the itihāsa-s mention it as being used as a mechanical device for the defense of forts it is likely that it was indeed some form a siege engine of the early Arya-s.

For the same incantation the Maitrāyaṇī-Saṃhitā (in MS 1.5.2.8) gives a rather different explanation:

मनोर् ह वै दश जाया आसन् । दशपुत्रा । नवपुत्रा । अष्टपुत्रा । सप्तपुत्रा । षट्पुत्रा । पञ्चपुत्रा । चतुष्पुत्रा । त्रिपुत्रा । द्विपुत्रा । एकपुत्रा । ये नव आसन् तान् एक उपसमक्रामत् । ये अष्टौ तान् द्वौ । ये सप्त तान् त्रयः । ये षट् तान् चत्वारः । अथ वै पञ्च एव पञ्च आसन् । ता इमाः पञ्च । दशत इमान् पञ्च निरभजन् । यद् एव किं च मनोः स्वम् आसीत् । तस्मात् ते वै मनुम् एव उपाधावन् । मनौ अनाथन्त । तेभ्य एताः समिधः प्रायच्छत् । ताभिर् वै ते तान् निरादहन् । ताभिर् एनान् पराभावयन् । परा पाप्मानं भातृव्यं भावयति य एवं विद्वान् एताः समिध आदधाति ।

Manu indeed had 10 wives. [Respectively,] with 10 sons, with 9 sons, with 8 sons, with 7 sons, with 6 sons, with 5 sons, with 4 sons, with 3 sons, with 2 sons, with 1 son. The 1 son [of the wife with 1] joined with the 9 sons [of the wife with 9]; Those of the she with 2 sons with those of she with 8 sons; 3 sons with 7 sons; 4 sons with 6 sons. The 5 [of she with] 5 remained that. They were just 5. The 10s (i.e. 50) dispossessed these 5. Now Manu had some [possession] of his own. Therefore, those [5] indeed ran to Manu himself. The sought protection in Manu. He gave each these fire-sticks. With those [fire-sticks] the [5 sons] indeed burnt up those [50]. They defeated those [50]. He who knows this and offers the fire-sticks defeats his evil enemies.

This brāhmaṇa is notable for more than one thing: We know that the Hindus were aware of the formula for the sum of natural numbers $1..n$ from the famous citation of the sage Śākapūṇi in the Bṛhaddevatā regarding the hidden Āgneya ṛk-s associated with the "jātavedase sunavāma..." sūkta (Ṛgveda 1.99). There he gives the sum of 1+2+3...+1000=500500. This brāhmaṇa gives the derivation of the formula for the sum of such a series cryptically and is reminiscent of how Carl Gauss said he computed such a sum as kid. Both brāhmaṇa-s from the two YV saṃhitā-s importantly play on the power of the word śata (100) in the incantation. Once Manu gives his 5 dispossessed sons the samidh-s they are said to have beaten their 50 rival half-brothers. How does this come about? Again it seems to rely on an arithmetic symbolism. When he gave them the samidh-s, as the TS states that samidh makes you śatendriya. Thus, it seems to imply that the 5 become $5 \times 100 > 50$ thereby beating their half brothers.

That apart it also provides a clue regarding the origin of the story formula of the Mahāb-

harata. We have remarked several times before that when old history was composed it was poured in the bottles of preexisting myth and thereby took their shape. Thus, when we encounter formulaic numbers like 100 (Kaurava-s) and 5 (Pāṇḍava-s) one is immediately alerted to the use of a preexisting mythic frame. Indeed, such a formula related to the count and the differentiation of the Pāṇḍu-s extends beyond the Indo-Iranian horizon. In the Secret History of the Chingizid Mongols we hear the tale of their legendary ancestress Alan Qo'a bearing 5 sons. Notably, there too 2 of her sons are of different father from the from other 3. A birth through a divine non-human father is implied for 3 of them (all 5 in the case of the Pāṇḍu-s). Further, Alan Qo'a specifically instructs her 5 sons to be united despite their being half-brothers. So there is a hint of the need of unity in face of conflict fraternal conflict. These motifs echo what are seen far away in time and space in the Mahābhārata of the Hindus. Hence, we were curious as to whether we might find earlier echoes of the Mahābhārata story formula in earlier Indo-Āryan tradition. We believe that the above brāhmaṇa is indeed the "essentialized" motif of fraternal conflict featuring the number of 5 against 50 that became 5 versus 50×2 in the Mahābhārata where the party of 5 prevailed in the end despite being initially dispossessed as in this case.

Now we move on to an entirely different theme from a brāhmaṇa passage from the Kapiṣṭhala-kaṭha-Saṃhita 35.8.

सा एषा अनुष्टुप् । तस्याः सप्ताक्षरम् एकम् पादम् अष्टाक्षराणि त्रीणि । तेषां सप्तानां यानि त्रीणि तान्य् अष्टाव् उपयन्ति । तन्य् एकादश । सा त्रिष्टुप् । यानि चत्वारि तान्य् अष्टाव् उपयन्ति । तानि द्वादश । सा जगती । यान्य् अष्टौ सा गायत्री ।

There was this Anuṣṭubh. 1 of its feet had 7 syllables, the [remaining] 3 had 8. Of the [foot] which had 7, 3 of them went to the 8. That made 11. This was the Triṣṭubh. The [remaining] which were 4 [of that foot] went to the 8. That made 12. This was the Jagatī. The [remaining] feet which had 8 [syllables became] the Gāyatrī (Kapiṣṭala-kaṭha-saṃhitā 35.8).

The model being proposed here is something comparable to what we see in evolution of nucleic acid and protein sequences. The original Anuṣṭubh is conceived thus:
− − − − − − − − | − − − − − − − − −
− − − − − − − − | − − − − − − − −

There is fission and fusion with deletion shown by []:
− − − − − − − − | − − − [− − − −] → − − − − − − − − − − − − (1 foot of Triṣṭubh) or
− − − − − − − − |[− − −] − − − − → − − − − − − − − − − − − − − (1 foot of Jagatī)

What remains is:
− − − − − − − − | − − − − − − − − −
− − − − − − − − (Gāyatrī)

Of course, no surviving regular Anuṣṭubh from the earliest Vedic tradition has a 7-syllabled final foot. So is this merely a case of brāhmaṇa numerology or does it reflect some early development in prosody? Now the existence of a basic 8-syllabled unit is something mentioned early in Vedic tradition e.g. by Kurusuti Kāṇva:

vācam aṣṭāpadīm ahaṃ navasraktim ṛtaspṛśam
indrāt pari tanvam mame (RV8.076.12)
An eight-[syllable]-footed, nine-cornered utterance, touching Ṛta
I have measured out its body from Indra.

Being a Gāyatrī with 3 feet of 8 syllables each, the ṛk is testimony for what it states. Further, what is the "nonagonal" form of the utterance? The sūkta in question is composed as sets of tṛca-s of Gāyatrī-s. Thus each tṛca has 3×3 8-syllabled feet giving us the navasrakti structure the ṛṣi mentions. Thus, we can be sure that 8 was definitely a recognized unit of the foot from early one. Further, the very term pāda as a metrical foot has a Iranian cognate paδa used in the same sense. Further, (poús) as used by Aristophanes suggests that this was indeed the originally the Greek cognate of the Vedic pāda. Thus a comparable metric foot was recognized early in Indo-European. By comparing Sanskrit, Avestan and Greek, Martin West proposed that there are reconstructible proto-feet of Indo-European prosody with 8 syllables and other versions of them with 6 and 7 syllables. If this were true then the brāhmaṇa might be recalling or reconstructing an origin mechanism wherein the shortened 7-syllabled element fragments and merges with adjacent 8-syllabled feet to give rise to the Triṣṭubh and Jagatī.

In any case this irregular hypothetical Anuṣṭubh is not the standard Anuṣṭubh of Sanskrit which since the earliest Vedic record came to be of 4×8 syllables. Indeed, this form of the Anuṣṭubh was the basis of a child's mathematical problem presented by Bhāskara-II in his Līlāvatī

समानाम् अर्ध-तुल्यानाम् विषमाणाम् पृथक् पृथक् ।
वृत्तानाम् वद मे संख्याम् अनुष्टुभ्-छन्दसि द्रुतम् ॥
Tell me quickly what are the counts of the variations of Anuṣṭubh meter with:
(i) same [configuration of feet]
(ii) half-equivalent [feet]
(iii) dissimilar [feet]

Each syllable can take a short (0) or a long state (1) . If every foot has the same configuration of 0,1 then we only have to look for combinations of one 8-footed element. If it has half-equivalent feet the two 2×8 syllable configurations are the same. But we have remove all instances where all 4 feet are same for a strict definition. Now if all feet are dissimilar then we have 32 syllables available but we have to remove all those where either all or a pair of feet are the same. Thus we get the answers as:

(1) $2^8 = 256$; (ii) $2^{16} - 2^8 = 65536 - 256 = 65280$; (iii) $2^{32} - 2^{16} = 4294967296 - 65536 = 4294901760$

Interestingly, these numbers make an appearance in modern computing e.g. as in 16-bit and 32 bit computing and the largest 32 bit number.